

CLAIMS

1. A self centering delivery catheter for delivery of an expandable intraluminal device into a vessel, the delivery catheter comprising:
 - an outer sheath;
 - a cannula disposed inside the outer sheath and axially translatable relative to the outer sheath;
 - a set of centering legs attached to the cannula, the centering legs being operable between a first retracted position and a second extended position, the centering legs moving radially away from the cannula as the centering legs move from the first position to the second position;
 - the relative position of the outer sheath and cannula controlling operation of the centering legs between the first and second positions;
 - a control wire disposed inside the cannula and axially translatable relative to the cannula;
 - a release mechanism attached to a distal end of the control wire, the release mechanism structured to engage and disengage the expandable intraluminal device, axial translation of the control wire operating the release mechanism to disengage the expandable intraluminal device.

2. The delivery catheter of claim 1, wherein the centering legs are biased towards the second extended position.

3. The delivery catheter of claim 1, wherein the centering legs are positioned inside the outer sheath in the first retracted position, and wherein the

centering legs are positioned outside the outer sheath in the second extended position.

4. The delivery catheter of claim 1, wherein the centering legs are constructed of a memory material.

5. The delivery catheter of claim 1, wherein the free end of each centering leg is atraumatic.

6. The delivery catheter of claim 1, wherein each centering leg has a concave curvature facing the cannula.

7. The delivery catheter of claim 6, wherein each centering leg includes a first end attached to the cannula and a second free end, the second free end having a curvature extending radially away from the cannula.

8. The delivery catheter of claim 1, further comprising a hub circumscribing the cannula, the hub connecting the set of centering legs to the cannula.

9. The delivery catheter of claim 1, wherein the release mechanism includes a hook formed at the distal end of the control wire.

10. The delivery catheter of claim 1, wherein a distal end of the cannula receives the expandable intraluminal device, and wherein axial translation of the cannula relative to the control wire places the expandable intraluminal device outside of the cannula.

11. The delivery catheter of claim 10, wherein the cannula includes an increased diameter portion sized to receive the expandable intraluminal device and hook.

12. The delivery catheter of claim 1, wherein the release mechanism includes a cap formed at a distal end of the cannula, the cap including a bore receiving a cylinder, the cylinder operatively connected to a distal end of the control wire, the cap including channels receiving struts of the expandable intraluminal device, the cap and cylinder cooperating to engage the filter.

13. The delivery catheter of claim 12, wherein axial translation of the control wire positions the cylinder relative to the cap to disengage the filter.

14. A method for delivering a expandable intraluminal device inside a vessel comprising the steps of:

providing a self centering delivery catheter having an outer sheath, a cannula disposed inside the outer sheath and axially translatable relative to the outer sheath, a set of centering legs attached to the cannula and biased away from the cannula, a

control wire disposed inside the cannula and axially translatable relative thereto, and a release mechanism attached to a distal end of the control wire;

placing the self centering delivery catheter within the vessel;

translating the outer sheath axially relative to the cannula to expose the set of centering legs and allow the set of centering legs to move radially away from the cannula and engage a wall of the vessel; and

translating the control wire axially relative to the cannula to expose the expandable intraluminal device and allow the expandable intraluminal device to expand and engage the wall of the vessel.

15. The method of claim 14, further comprising the step of manipulating the cannula to adjust the relative positions of the centering legs to substantially center the cannula within the vessel.

16. The method of claim 15, wherein the manipulating step includes axially translating the outer sheath and cannula together to adjust the position of the set of centering legs.

17. The method of claim 14, wherein the step of translating the control wire includes the step of manipulating the control wire to actuate the release mechanism and disengage the filter.

18. The method of claim 14, further comprising the step of translating the control wire axially relative to the cannula to position the control wire inside the cannula.

19. The method of claim 18, further comprising the step of translating the cannula axially relative to the outer sheath to position the cannula inside the outer sheath.

20. The method of claim 19, further comprising the step of removing the self centering delivery catheter from the vessel.

21. A method for delivering a expandable intraluminal device inside a vessel comprising the steps of:

providing a self centering delivery catheter having an outer sheath, a cannula disposed inside the outer sheath and axially translatable relative to the outer sheath, a set of centering legs attached to the cannula and biased away from the cannula, a control wire disposed inside the cannula and axially translatable relative thereto, and a release mechanism attached to a distal end of the control wire;

placing the self centering delivery catheter within the vessel;

translating the outer sheath axially relative to the cannula to expose the expandable intraluminal device and allow the expandable intraluminal device to expand and engage the wall of the vessel; and

further translating the outer sheath axially relative to the cannula to expose the set of centering legs and allow the set of centering legs to move radially away from the cannula and engage a wall of the vessel.

22. The method of claim 21, wherein the step of further translating the outer sheath and allowing the centering legs to move radially away from the cannula centers the expandable intraluminal device within the vessel

23. The method of claim 21, further comprising the step of manipulating the control wire to ensure the expandable intraluminal device is well positioned in the vessel.

24. The method of claim 21, further comprising the step of manipulating the cannula to ensure the cannula and centering legs are well positioned in the vessel.